

Notice of Allowability

Application No.

09/763,981

Examiner

Kelly Mahafkey

Applicant(s)

ELSOME ET AL.

Art Unit

1761

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Interview held April 26, 2006 and the reponse of May 11, 2006.
2. ☒ The allowed claim(s) is/are 1-3,6,7,9-18 and 20-42.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

REASONS FOR ALLOWANCE

Amendments made May 11, 2006 have been entered.

Claims 1-3, 6,7, 9-18, 20-42 are pending.

Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Chris Lewis on July 20, 2006.

Please amend claims 1, 6, 7, 9, 10, 13, 15, 17, 20-22, 29-33.

Claim 1. A sensor for detecting a gaseous substance resulting from: (1) food spoilage within food packaging; (2) opening of the food packaging; or (3) compromise of the food packaging, the sensor comprising:

a film comprising a sensor composition, disposed on an internal surface of the food packaging or disposed on a label retained inside the food packaging, wherein said sensor composition comprises

a resinous material and

a metal co-ordinated complex, where in the metal is selected from the group consisting of palladium, platinum, ruthenium, and iron, and wherein the complex, upon exposure to the gaseous substance resulting from (1) food spoilage; (2) the opening of the food packaging; or (3) the compromise of the food packaging, undergoes a ligand exchange reaction by the binding of the gaseous substance to the metal(s) atom of the complex to release a [detectable] component from the metal co-ordinated complex, creating a detectable change to the sensor.

Claim 6. A sensor according to claim 1, wherein the metal co-ordinated complex is a palladium-fluorophore complex.

Claim 7. A sensor according to claim 6, wherein the metal co-ordinated complex is palladium-Fluorexon.

Claim 9. A method of detecting a gaseous substance resulting from (1) food spoilage within a food packaging; (2) opening of the food packaging; or (3) compromise of the food packaging, comprising the step of:

applying a film comprising a sensor composition, to an internal surface of the food packaging or

inserting a label coated with the film comprising the sensor composition to be retained within the packaging,

wherein the sensor composition comprises a resinous material and a metal co-ordinated complex, where in the metal is selected from the group consisting of palladium, platinum, ruthenium, and iron, and which complex, upon exposure to the gaseous substance resulting from (1) food spoilage within the food packaging; (2) the opening of the food packaging; or (3) the compromise of the food packaging, undergoes a ligand exchange reaction by the binding of the gaseous substance to the metal(s) atom of the complex to release a [detectable] component from the metal co-ordinated complex, creating a detectable change to the sensor.

Claim 10. A method according to claim 9, wherein the [detectable] component released is a fluorophore or a chromophore released from the metal complex through the ligand exchange reaction with the gaseous substance.

Claim 13. A sensor for detecting a gaseous substance resulting from food spoilage within a food packaging, comprising
a metal co-ordinated complex disposed in or on a substrate, which complex, upon exposure to the gaseous substance resulting from food spoilage, undergoes a ligand exchange reaction by the binding of the gaseous substance to the metal of the complex to release a [detectable] component from the metal co-ordinated complex, creating a detectable change to the sensor, wherein the metal complex is a palladium-fluorophore complex, and

a barrier layer disposed between the metal complex and food disposed in the food packaging, wherein the barrier layer is permeable to the gaseous substance resulting from food spoilage but is not permeable to the metal or the released component.

Claim 15. A sensor according to claim 13, wherein the metal co-ordinated complex is immobilized in a film.

Claim 17. A sensor according to claim 13, wherein the metal co-ordinated complex is palladium-Fluorexon.

Claim 20. A sensor according to claim 1, wherein upon the release of the [detectable] component, the sensor exhibits [appreciable] a color change, and the color change is only recognized when the sensor is [only when] excited by non-visible light.

Claim 21. A sensor according to claim 1, wherein upon the release of the [detectable] component, the sensor exhibits [appreciable] a color change, and the color change is recognized under visible light.

Claim 22. A sensor according to claim 1, wherein the sensor [composition] comprises a plurality of sensors [elements] that individually indicate an increasing level of contamination up to a danger level.

Claim 29. A method for detecting a gaseous substance resulting from food spoilage within a food packaging, comprising the step of:

applying to the interior of the food packaging a sensor comprising a metal co-ordinated complex, which complex, upon food spoilage, undergoes a ligand exchange reaction by the binding of the gaseous substance to the metal of the complex to release a ~~[detectable]~~ component from the metal co-ordinated complex, creating a detectable change to the sensor, wherein the metal co-ordinated complex is a palladium-fluorophore complex.

Claim 30. A method according to claim 29, wherein the step of applying the sensor to the interior of the food packaging comprising applying the sensor to an internal surface of the food packaging and the method further comprises the step of providing a barrier layer disposed between the metal co-ordinated complex and the food, wherein the barrier layer is permeable to the gaseous substance resulting from food spoilage but not to the metal or the ~~[detectable]~~ released component.

Claim 31. A method according to claim 29, wherein upon the release of the ~~[detectable]~~ component, the sensor exhibits ~~[appreciable]~~ a color change, and the color change is recognized under visible light.

Claim 32. A method according to claim 29, wherein upon the release of the [detectable] component, the sensor exhibits [appreciable] a color change, and the color change is recognized only when excited by non-visible light, and the method further comprises the step of exposing the sensor to non-visible light.

Claim 33. A method according to claim 29, wherein the sensor comprises a plurality of sensors [elements] that individually indicate an increasing level of the gaseous substance up to a danger level.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance:

Applicant's arguments, discussed in the interview April 26, 2006, with respect to the DeCastro reference within 103(a) rejections made in the office action November 9, 2005 have been fully considered and are persuasive. The 103(a) rejections of claims 1-3, 6, 7, 9-18, 20-36 have been withdrawn. The DeCastro reference was relied upon for teaching a transition metal complex that underwent a ligand exchange when exposed to hydrogen sulfide. However, after further consideration, the interpretation of DeCastro was re-evaluated. DeCastro Claims 1, 4, 9, 12-14, and 19-20, support the new position of the office; DeCastro teaches of a two chemical changes, the first in which a ligand reaction exchange occurs in response to the amount of moisture in air, and the second

which reaction (not a ligand exchange reaction) occurs when sulfur is detected. Thus, DeCastro does not teach of a ligand exchange reaction in order to detect sulfur.

The closest prior art, Arnold et al. (WO 97/33177) discloses of a sensor that is capable of detecting gaseous substances, including sulfur-containing compounds. The sensor comprises a film composition and a metal co-ordinated complex, where the metal comprises metals such as iron or platinum, wherein the metal is complexed with a fluorescent material, and wherein, upon exposure to the gas, the metal co-ordinated complex undergoes a ligand exchange reaction. The reference, however, teaches of the sensor only in reference to medical and drug related applications. The reference does not teach or suggest the sensor for detecting a gaseous substance resulting from food spoilage, opening of a food package, or compromise of the food package. Furthermore, the reference does not teach or suggest placing the sensor into packaging.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly Mahafkey whose telephone number is (571) 272-2739. The examiner can normally be reached on Monday through Friday 8am-4:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on (571) 272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Kelly Mahafkey
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Art Unit 1761



KEITH HENDRICKS
PRIMARY EXAMINER